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ABSTRACT

This review covers research literature concerning the inquiry method reported by "Social Education" from 1960 to 1968. Studies were selected which dealt with either the learning outcomes or adaptability aspects of inquiry. It is cautiously concluded that under certain conditions inquiry is at least as effective as more traditional methods and, in particular circumstances, more efficacious in both cognitive and affective development. As to the adaptability of inquiry to curricula, teachers, students, strategies and materials, the results reported are quite mixed. The author's overall conclusion is that research related to the method of inquiry is neither conclusive nor totally convincing enough to warrant global adoption, and that better organized, wider range research strategies, which include more descriptive and less experimental models, will be necessary to enable rational curriculum decisions and subsequent modifications. A 60-item bibliography is appended. [Not available in hard copy due to marginal legibility of original document.] (JLB)

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A DEAD OF INQUIRY: TEMPEST IN A TEACUP?

(A review of the research literature concerning the inquiry method reported by Social Education from 1960-1968)

An Article Submitted

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by

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CHAPTER I

INTRODUCTION

There appears to be an almost universal acceptance among social studies educators of the need to involve students in learning experiences which will develop the capacity for continuous learning and adaptibility to change. However, while this agreement may exist there is much discord over what method to employ in attaining these goals. The literature of social science education abounds with references to the advantages and disadvantages of the inquiry method of teaching and learning. Proponents of inquiry report phenomenal success related to many aspects of educational endeavor. Opponents contend that these strong claims are overestimations and have not been empirically substantiated or even clearly tested in an experiment. Much of the debate on both sides is being waged using only untested generalizations which are predicated upon mere observational impressions. A dilemma results, however, when the educational community is unable to distinguish fact from opinion. It is in the interest of mitigating this state of academic confusion that this study has been conducted.

Does the inquiry method really make a difference in educational development? The pursuit of an answer to this inquiry into inquiry directs the rational investigator to a review of the research literature. Research workers are engaged even now in a systematic search for solutions to this and other questions. Unfortunately the research base on which many statements about inquiry practices are made is something less than

comprehensive. Research of inquiry in social studies is as yet incomplete and probably never will be completely finished. Research in this area is extremely complex as in any social science because the investigator is concerned with students and teachers as individuals and as members of groups. In an effort to disentangle these complex interactions many sophisticated experimental designs and statistical techniques have been developed. However, randomization and laboratory-like control over extraneous variables is essential in experimental design but is seldom possible in an authentic classroom environment. Such limitations have frustrated experimental researchers and have thwarted promulgation of global advantages or disadvantages of the inquiry method. Most researchers identify more unsolved problems at the end of their studies than they were able to recognize at the beginning.

With these problems and known limitations taken into consideration, this investigator launched a review of the research literature regarding the inquiry method in teaching social studies as reported in Social education from 1960 through 1968. The studies represent elementary, secondary and college level investigations. Studies were selected for this review that were concerned with:

1. The learning outcomes of inquiry in both cognitive and affective domains.

2. The adaptability of inquiry to curricula, teachers, students, strategies and materials.

All Dissertation Abstracts relevant to social studies and fifty periodicals known to publish social studies research are reviewed and only

those with a reasonably rigorous design and method are reported in the annual review edition of Social Education. Ideally, the serious reviewer would obtain copies of the dissertations themselves and work from original sources, but the procedure is prohibitively costly in both time and money. Specific problems, however, attend the dependency on Dissertation Abstracts. Difficulty in judgment and probable accuracy pose problems as many of the reviews are only abstracts and deal primarily with the rationale, findings and conclusions and only slight attention is given to design and method. However, in the interest of parsimonious reporting, only those aspects of the studies bearing a direct relationship to the questions under consideration will be reported.

For the purposes of this paper the inquiry method is defined as an attitude toward learning which employs mental tools and processes within a range of investigative activities to analyze and evaluate alternative solutions to problems. The following three characteristics would appear essential to the inquiry approach:

1. Involvement: The method of inquiry indicates that the student becomes a participant in the process of reorganizing his knowledge around new centers of attention and interest.

2. Verification: Inquiry concerns itself with the validity and reliability of the facts in which solutions, conclusions, or generalizations are established.

3. Search: The emphasis is not only on knowledge utilized as background for the discussions, but on the processes by which the student finally arrives at a decision about the issue.

Related concepts such as discovery, problem-solving, reflective

thinking, critical thinking, process, and the inductive method are all used interchangeably with the inquiry method for this study. Citizenship, viewed by many as a most widely recognized and overarching goal for the social studies, will not be used as a explicit criterion for the inquiry method in this review. Massialas and Cox define a citizen as a person that can think reflectively and make decisions and judgments based on a thorough analysis of the issues. (#10, 1966). Or in the opinion of Oliver and Shaver, a citizen is a political analyzer and participant in public policy decisions. (#38, 1966). These are goals proffered by inquiry people. Even using these biased definitions the questions remain the same. Can the inquiry method produce the kinds of cognitive and affective outcomes necessary to this kind of development? Further, assume that inquiry can demonstrate significant differences in learning when compared with more traditional methods, will it work within the existing limitations of the schools? Responses to these questions, predicated upon research findings, will be the subject of the following paragraphs.

II. LEARNING OUTCOMES

Claims regarding learning outcomes with the use of the inquiry method can be grouped in much the same fashion that the multiple goals of social studies are classified.

A. Knowledge acquisition: facts, concepts, generalizations, and principles and theories.

B. Skills and Abilities: cognitive skills, modes of inquiry, decision making and study skills.

C. Affective goals: attitudes, feelings, sensitivities and values.

Using the foregoing organizational format, the following statements represent a few of the related claims of the inquiry method relative to learning outcomes as echoed by some of its leading proponents. Cox and Massialas (#35, 1966) contend that students learn just as many facts using inquiry as with more traditional approaches. Oliver and Shaver (#50, 1966) claim there is no loss of knowledge when instruction is focused upon reflective thinking. Bruner (#6, 1961) holds that discovery (inquiry) increases the intellectual potency, transfer, memory and organizational ability of the learner. Suchman (#54, 1965) and Fenton (#20, 1961) contend that critical thinking and skills of scientific investigation are enhanced via the inquiry approach. The Educational Development Center (#15, 1968) reports that children get a sense of self-importance and self-gratification using the discovery approach. Cox and Massialas (#10, 1966) purport that children show more interest, enthusiasm and a sense of relevance using inquiry. Bruner (#6, 1961) holds that discovery is more intrinsically rewarding and similarly Suchman (#54, 1965) claims learners assume more responsibilities and become motivated.

Judging from the preceding generalizations, one could be inclined to conclude that the inquiry method is the panacea for social studies education. A cursory survey of the research regarding knowledge acquisition when employing an inquiry strategy suggests that caution and

reservation ought to be exercised. Eight experimental studies, each using a different type of inquiry device, report no significant differences in subject achievement between groups taught by traditional methods and those taught by the inquiry method. Usually the results were reported that experimental groups exhibited as great a mastery over subject information as matched control groups. The stated conclusion appeared related to the investigators hypotheses or methodological preference. The studies and devices employed in the foregoing summary were: case studies, Oliver and Shaver (#50, 1965); post-holing, Williamson (#59, 1967); laboratory method, Barrat (#5, 1965); source reading, Fitch (#21, 1965); rational examination discussion, Frayer (#23, 1954); simulation, Garvey and Seiler, (#24, 1967); operational model problem solving, Lee (#32, 1968); Socratic dialogue, Oliver and Shaver, (#39, 1962). Three studies, however, found subject achievement significantly better in the inquiry groups; Baker using a simulation device, (#4, 1967); Hardy involved the students in an archeological dig, (#25, 1968); and Hunkins employed questioning techniques from the higher cognitive levels (#26, 1967). Due to the lack of statistical reporting, six studies were more difficult to assess. Each of the studies reported conclusions which were favorable to inquiry methods for knowledge acquisition, although instrumentation was omitted in the abstract. Massialas (#35, 1963) and Cousins (#8, 1963) reported similarly that students in experimental inquiry groups learned as many facts as traditionally taught control groups. Arnsdorf (#3, 1961) reported that the inquiry-discovery approach facilitates the exploration of geographic

concepts and relationships. Crabtree (#11, 1966), using a more sophisticated model, reported that inquiry permitted third-grade students to develop operational geographical theories. Suchman (#53, 1960) and Fossion (#41, 1965) found that inquiry lead to improvement in understanding complex ideas and concepts.

Most all of the studies that measured the knowledge acquisition capability of inquiry reported other associated learning outcomes such as cognitive abilities development, inquiry skills and or affective changes. Six studies reported no statistical significant differences between inquiry treatment groups and controls. Four of these studies used inquiry techniques: source material, Darrat (#5, 1965); post-holing, Williamson (#59, 1967); high level cognitive questions, Hunkins (#29, 1967); and case studies, Anderson, (#1, 1964). In contrast, Fairbrook (#40, 1965) used a programmed unit, although not an inquiry device, and found no significance on critical thinking measures. Anthony and Bernard (#2, 1967) employed a Contradiction Inventory and found no significant differences between those who were specifically instructed in critical thinking and those receiving no treatment. Five studies reported significant differences in skills and abilities. Two of these studies, Elsmore (#18, 1963) and Fossion (#41, 1965), used a problem solving technique to demonstrate differences in cognitive abilities. Arnsdorf (#3, 1961), and Massialas (#35, 1963), used pure discovery techniques with their experimental groups to produce significant differences. Two of Fitch's (#21, 1966) seven experimental groups showed significant differences in

critical thinking instruments using the source readings approach. Crabtree (#11, 1966) concluded the inquiry method has the advantage of using higher cognitive operations from which idea relationships are built. Oliver and Shaver (#39, 1962) reported that students are capable of learning an analytical inquiry system and then applying it to simple cases based upon political and social issues.

All of the eleven reports citing affective outcomes of the inquiry process reported positive effects using inquiry. Upon cursory inspection it would appear that inquiry does have distinctive advantages in the affective domain. Closer examination of these eleven studies discloses a general paucity of instrumentation in reporting these findings. Only three, Elsmore (#19, 1963), Williamson (#59, 1967), and Estes (#20, 1967) report a statistically significant difference in tolerance and attitudes between groups. Five of the eleven studies reported clinical observation impressions completely omitting any reference to a dependent variable and only citing such conclusions as: "students had a greater interest and appreciation for the course" Baker, (#4, 1967); Herman (#27, 1966); Arnsdorf, (#3, 1961); Oliver and Shaver, (#39, 1962); and Anderson, (#1, 1964). Frowge, (#23, 1964), found that students in the reflective situation were shown to have a more positive attitude toward the teacher at the conclusion of the course. Massialas (#36, 1957), (#35, 1963) found students in the experimental groups demonstrated more independence from teacher, accepted the tentativeness of knowledge and operated at a high level of motivation. Massialas and Levin

(#36, 1967) report that some students experienced mild frustration when left without exact answers.

Thus the research findings appear to indicate that under certain conditions inquiry is at least as effective as more traditional methods and within particular circumstances more efficacious in both cognitive and affective development. A cloud of doubt, however, which threatens the generalizability of the findings continues to persist. Did the control groups treated with "traditional" expository approaches, employ equally competent instructors utilizing multi-media devices to produce otherwise equal instructional in-put when compared with the instructional in-put of the inquiry groups? A more prudent conclusion would further delimit the generalization to: with subject matter of this nature, inquiry experience of this type, in this amount, produces this pattern of responses in pupils at this level of development. Although a statement with numerous qualifying clauses produces a more orthodox report of the true findings, it is all but useless to those seriously considering the inquiry method for classroom implementation. Nor has the inquiry research regarding learning outcomes begun to give answers needed for firm recommendations by conscientious educators to the schools.

III. ADAPTABILITY

Inquiry research of a different nature, which includes the interactions of realistic variables is necessary before empirically sound decisions can be made. The following questions must be answered:

1. Are the existing social studies course offerings adequate to effectively execute the inquiry approach? (separate disciplines, integrated studies, controversial issues, structure?)

2. Can the method of inquiry be effective with a diverse student audience? (mental abilities, age, socio-economic status, psychological disposition?)

3. Are all teachers able to employ the inquiry method? (style, training, psychological and philosophical disposition?)

4. Are the social studies materials currently available suitable to employ the inquiry approach? (textbooks, audio-visual media, primary sources?)

Many proponents of inquiry provide affirmative answers to these questions. Massialas and Cox (#10, 1966), (#9, 1967) purport the following claims for inquiry.

1. History as a course to be studied by school children can be justified because of its potential for inquiry.

2. Social studies are amenable to the inquiry approach.

3. Inquiry is more productive in dealing with controversy.

4. Lessons purporting to teach critical thinking are effective with students of all mental abilities and ages.

5. Many of the skills involved in reflection can be used to improve various styles of teaching.

6. Inquiry takes place best when the teaching style is more indirective and less authoritarian.

7. Most textbooks now in existence would be useable in the inquiry process under the guidance of a skilled teacher.

Like claims concerning learning outcomes these hypotheses are subjected to the harsh realities of research in the ensuing paragraphs. Also like previously cited research, studies tend to overlap and

multiple findings often complicate lucid reporting. Consequently, some studies are cited on numerous occasions depending upon the nature of their findings. Each question with its various implications will be taken in sequential order. Of the fifty-two research studies reported in the nine-year survey, a total of forty-three cite specific social studies courses in which inquiry experiments were conducted. The following are tabulation totals for this summary: history-15; social studies (usually elementary grades) -12; problem of democracy -5; government-4; geography-2; anthropology-2; sociology-1; and economics-1. Although one might conclude based on this survey that the traditional social studies curriculum is indeed well suited for inquiry studies, constraint should be exercised particularly if one considers that the intent of these studies was generally not to support the hypothesis that current social studies curricula are suitable for the inquiry method. Outside of the subject of history there was a paucity of research reported which specifically focused upon the applicability of a selected topic, discipline or area to the inquiry method.

Oliver and Shaver (#39, 1962) report that controversial issues used in their experimental curriculum serve the implementation of an analytical inquiry system. Arnsdorf (#3, 1961) found that using geographical relationships facilitated a discovery approach. Hardy (#25, 1963) reported that anthropology used in a sixth grade social studies class produced a logical inquiry investigation. Wendell (#59,

1967) and Ribble (#44, 1967) found respectively that history and economics had "structures" which direct the inquiry approach. Clement's (#7, 1965) empirical study showed the disciplines of sociology, anthropology and history to have inquiry-like processes in their respective methodologies and he concluded that students should be challenged with these systems. Cousins (#8, 1963) devised a model of cognition which he claims represented the intellectual development that occurred in his experimental group. Cousins contended that this reflective thinking model can be employed in any social studies class.

In relation to the question concerning the reactions of varied student audiences to the inquiry method, the reported research leaves several aspects of the question unanswered. Of a total of thirty-nine studies reporting either a specific grade or age level, twenty-six studies reported significant differences, twenty favoring inquiry groups over controls. A breakdown of the grade levels is as follows: grades 1-6, twelve studies (6 significant); grades 7-9, ten studies (6 significant); grades 10-12, thirteen studies (8 significant). Three studies in particular had specific conclusions regarding various grade levels. Hunkins (#29, 1967) concluded that elementary school children can be taught to think critically and that the case study is an effective means for accomplishing this purpose. Oliver and Shaver (#50, 1965) reported that test scores demonstrated junior high students can be taught to think conceptually using inquiry techniques. Thus the research strongly suggests that age is no barrier to the method of inquiry.

Three studies addressed themselves specifically to the mental ability variable. According to Whitmall (#58, 1968) student I.Q. was the most important factor affecting achievement on both convergent and divergent questions. His findings are significant in view of the commonly held notion that creative thinking is associated with critical thinking. One study re-examined some assumptions about creativity and intelligence. Klausmeier and Wiersma (#31, 1965) showed that low I.Q. groups performed less well than average groups and the average groups performed less well than the high I.Q. groups on four tests of divergent thinking. Herman (#26, 1967) reported that the teachers of above average I.Q. groups found they were able to use more indirect instruction techniques (inquiry), allow more student centered activities and generally be more democratic.

Although psychological disposition vis' a vis' inquiry was only very indirectly studied, conclusions not favoring universal application of inquiry can be deduced. Using a college sociology class, Ehrlich (#17, 1961) found an inverse relationship between dogmatism and degree of learning. Those high in dogmatism had a lower learning rate than those with low dogmatism scores. In a supportive study, Kemp's (#30, 1963) findings indicated that those college freshmen who were low in dogmatism were more successful in tests of critical thinking than those high in dogmatism. Kemp hypothesized that highly dogmatic individuals have difficulty in tolerating ambiguities and are impelled toward a "closure" before full consideration is given to each piece of evidence. Oliver and Shaver's (#48, 1968) studies support the general

conclusions that all students do not react similarly to the same teaching behavior even with intelligence and prior knowledge controlled. Quinn (#43, 1964) considered a variable which is more philosophical than psychological. His studies found that Catholic students in both public and parochial schools scored significantly poorer on two measures of critical thinking.

While age should not be a delimiting factor as demonstrated by the research, mental ability, psychological disposition and socio-economic status variables will necessitate more extensive research effort before any conclusive generalizations can be formulated. Very closely related to heterogeneous student audience is the behavior of the teacher. In as much as the techniques and strategies employed by a teacher are a function of teaching philosophy and style, a large portion of the related studies have already been reported in the learning outcome sections. In summary, most of the studies related to teacher style and learning outcomes found that students have more success on convergent thinking if teachers tend to devote more time to lecturing and recitation. Students have more success on divergent questions, critical thinking tests and attitude scales if their teachers feel that the greatest impact on learning comes from student interaction with peers and teachers.

Five additional studies report on the difficulty of the inquiry task, the effect of teacher style upon thought process, psychological disposition and a survey of strategies employed by teachers judged to be superior. Fox (#22, 1962) found methods for developing critical thinking

were most difficult for teachers to employ. More experienced teachers found the use of logic and reasoning more difficult to teach than less experienced teachers. Ten per cent of the teachers questioned said they didn't have time to teach the skills of critical thinking. Taba (#55, 1963) and Crabtree (#17, 1967) studied student thought processes and the relative influences of teacher styles. Relative permissiveness elicited more frequent examples of divergent thinking. Results revealed an enormous influence of teacher behavior on the students' thinking patterns. McCollum (#37, 1968) secured dogmatism scores; educational set scores and scores in various areas measured by personal preference scale for prospective social studies teachers. He concluded that the high means achieved by all three student populations on the Dogmatism Scale indicated that they would encounter many problems in the use of the reflective method. He further concluded that the two groups with a factual set would find it difficult to test hypotheses, conceptualize, generalize and develop hypotheses. He believed that high educational set scores achieved by the third group indicated some potential for success in using the reflective method. Lux (#33, 1962) in his comparison of the teaching methods used by superior and non-superior social studies teachers found that both used the same strategies and activities but to different extents. Superior teachers used outside readings, oral reports, research papers and a topical approach, while the non-superior used surveys, community projects and a chronological approach.

Whether all teachers are able to employ inquiry or employ it

effectively is obviously dependent upon many factors. Only a few of these factors have been cited in the research literature. Just as one could conclude that more research is needed so also could another question be raised. Should all teachers ever employ only one method of instruction? Perhaps a little variety in the educational diet will produce other significant outcomes.

Assuming that a teacher and a group of students are ready, willing and able, are the materials traditionally found in schools providing the opportunity to engage in the inquiry approach? A total of seven survey studies reported findings which are all deleterious to the inquiry approach. Five of these surveys examined the contents of existing textbooks in history, government, anthropology and social studies. (Shaver, #49, 1965); Cox and Massialas, (#9, 1967); Smith, (#52, 1967); Urick, (#56, 1966); and Sady, (#46, 1963) all generally arrived at similar conclusions. Social studies textbooks represent considerable variability and that some of the newer materials offer more help to inquiry-oriented teachers. Teachers must go beyond the textbooks to find in-depth and analytic frameworks required for inquiry in the classroom. There is very little evidence of concern for the inquiry methods used by social scientists and although most textbooks abound with explanations, the "closed areas" of American culture, remain devoid of explanations not to mention the absence of comparative analyses. Rodine (#45, 1965) examined the availability of various news magazines in public schools. His study demonstrates that the liberal press was poorly

represented among more than two hundred-twenty schools surveyed. Sanburg (#47, 1967) analyzed the guide books on teaching about communism issued by state departments of education during 1960-1962. He concluded that in terms of a reflective analytical model of teaching, the guide books were of little value. All of the learning materials reviewed were of a vintage no later than 1966. This observation is significant in view of the recent publication avalanche initiated by the social studies projects. Many of the project materials are inquiry-oriented and most have publishers willing to disseminate their prized acquisitions to the waiting educational community.

IV. CONCLUSIONS AND RECOMMENDATIONS

The research related to the method of inquiry is neither conclusive nor totally convincing enough to warrant any global adoption. To label the inquiry method of this past decade as either the panacea or a tempest in a teacup would be over generalizing these research findings. However, the rational investigator cannot ignore the successful learning outcomes of the inquiry method recorded in several of the reports. For many students and teachers the concepts of the inquiry method provide an exciting and rewarding dimension to learning. For others the inquiry approach is fraught with intolerable frustration and subsequent failures.

In attempting to find viable solutions researchers have uncovered still more unknown areas and thus even more questions remain to be answered. This review began with the assumption that research could provide answers

or solutions to persisting problems in education. Perhaps educators have been too naive in expecting significant solutions from the research as it is currently conducted. Most of the studies reported in this account have been conducted by doctoral students who attempt to be unique in their experimentation. As a result they do not contribute adequately to the establishment of a more systematic body of knowledge which could be used to test more sophisticated hypotheses. Research conducted by others often investigate problems because of their convenience rather than the specific needs of the educational community. Therefore if research is to be an effective tool for problem solving, it must be approached as a coordinated study rather than a series of unrelated individual experiments. Rather than attempting to find universal advantages for the mode of inquiry, studies of a more limited scope should be conducted when utilizing the experimental designs.

Still a wider range of research strategies will be necessary to enable rational curriculum decisions and subsequent modifications. The more current research studies relied so exclusively upon experimental strategies that descriptive studies were all but omitted. While randomization, the experimental designs and sophisticated statistical treatment have permitted a wider utilization of experimental research, problems created by the natural classroom setting remain unresolved and therefore threaten the validity of their findings. The potential confounding variables must be either controlled or eliminated through randomization if the study results are to have internal validity.

However, in the typical classroom setting this is nearly impossible to achieve. To submit that these are limitations of the experimental studies is to render much of their findings as useless in the real world. Investigators should re-examine the range of descriptive type research strategies for possible solutions to many of these unanswered questions. Descriptive research need not be confined to routine fact gathering. Predicting and indentifying relationships among and between variables is the goal of competent investigators. There is a definite need for not only survey studies but interrelationship studies such as causal comparative studies, correlational studies, case studies, and longitudinal studies.

There appear to be as many problems about the nature of the research as questions about the mode of inquiry. This criticism of research effort is heard often throughout the educational community regardless of methodological predilections. Perhaps this structure within the field of social science research denotes the emergence of a greater maturity. In reviewing the nine years of research this evolutionary process was notable. The most recent research is characterized by more erudite studies with concomitant sophistication of design, method and statistical treatment. It would appear that social studies research is passing from infancy to a more scholarly stage of development.

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